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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,842	11/12/2003	Yanbin Yu	U001 100014	9497
32662 7590 09/19/2007 FELIX L. FISCHER, ATTORNEY AT LAW 1607 MISSION DRIVE SUITE 204 SOLVANG, CA 93463			EXAMINER WANG, TED M	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 09/19/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/712,842	Applicant(s) YU ET AL.	
	Examiner Ted M. Wang	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-12 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 6-8 and 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form P.T.O.-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed on 6/25/2007, with respect to the rejection(s) of claim(s) 1, 3-5 and 9-11 under 35 USC 102(b) and 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of US 5,809,009.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2, 3, 18 and 19 are rejected under 35 U.S.C. 112 second paragraph, because there is insufficient antecedent basis for this limitation in the claim.

- Claim 2, the limitation "the correlator" in line 13 as recited is insufficient antecedent basis for this limitation in the claim since "corrector" has not been introduced previously in the claim.

5. Claims 12, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to define the meaning of a term as recited in the claim.

- Claim 12, the term "periodical characteristics" has not been defined. It is not clear that what the "periodical characteristics" is referred to.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-5, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mutsuoka et al. (US 5,809,009).

- With regard claim 1, Mutsuoka et al. discloses a method of recovering symbol synchronization for a serial transmission, the method comprising the steps of:

obtaining in-phase and quadrature components of a received digital bit stream (Fig.10 element 11), the components including a pilot bit stream embedded therein (column 18 lines 56-60);

recovering a version of the pilot bit stream from the obtained components (Fig.10 element 31a and 31b and column 17 lines 24-40);

computing a correlator output to provide a timing correction factor (Fig.10 element 32a, 32b, 36, 37, 26, and 39, where the timing correct factor is at element 39 output, timing control signal);

applying the timing correction factor (Fig.10 element 39 output, timing control signal) to the stored copy of the received components to adjust the symbol timing of the received bit stream (Fig.10 element 38, where the timing

signal is sent to adaptive equalizer to adjust the stored copy of the received bit stream); and

recovering another version of the pilot bit stream from the copy of the received bit streams based on the adjusted symbol timing (Since the pilot can be extracted by 31b and 32b, it is inherent that the another version of the pilot bit stream is recovered from the previous timing control signal at first. Note that the pilot bit stream or the correlation signal 41 is generated before the next timing control signal takes effect.)

Mutsuoka et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching storing a copy of the obtained in-phase and quadrature components.

However, in the background section of Mutsuoka's reference teaches that storing a copy of the obtained in-phase and quadrature components (column 2 lines 18-21) in order to facilitate the synchronization process (column 2 lines 22-35) so that the communication quality can be improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the storing process by a buffer as taught by Mutsuoka in his back ground section into Mutsuoka's Fig.10 and place this buffer before elements 31a and 35 in order to improve the communication quality.

- With regard claim 3, Mutsuoka et al. further discloses wherein the step of computing a correlator output includes processing the data through an equalizer (Fig.10 element 38) which is trained by the output of the correlator (Fig.10

element 39 output, timing control signals) to assist in the detection of the pilot signal and recover the timing.

- With regard claim 4, Mutsuoka et al. further discloses wherein the step of recovering includes down sampling the recovered components data from T_s/M to T_s/N (Fig.10 element 35, where M and N could be any numbers and/or same numbers).
- With regard claim 5, Mutsuoka et al. further discloses wherein the step of recovering further includes processing the recovered components data through a fast equalizer (Fig.10 element 38) and providing the correlator output as feedback (Fig.10 elements 32b, 37, 26 and 39, where the feedback signal is considered as the timing control signals from timing generating section, 39, output) to the fast equalizer (Fig.10 element 38).
- With regard claim 10, which is a system claim related to claim 1, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 11, which is a system claim related to claim 4, all limitation is contained in claim 4. The explanation of all the limitation is already addressed in the above paragraph.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mutsuoka et al. (US 5,809,009) in view of Shirakata et al. (US 6,618,352).

- With regard claim 9, Mutsuoka et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching wherein the

pilot bit stream is transmitted using Differential Phase Shift Keying and sync and data fields of the digital bit stream are transmitted using Quadrature Amplitude Modulation.

However, Shirakata et al. teaches wherein the pilot bit stream is transmitted using Differential Phase Shift Keying (column 14 lines 11-47) and sync and data fields of the digital bit stream are transmitted using Quadrature Amplitude Modulation (column 18 lines 40-46) in order to perform the modulation and demodulation efficiently even with a burst-like OFDM signal constructed so that masses of data intermittently appear, thus improving the transmission efficiency when the OFDM signal is transmitted in a burst manner (column 14 lines 48-56). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Shirakata et al. into Mutsuoka's system in which transmitting pilot bit stream using Differential Phase Shift Keying and transmitting sync and data fields of the digital bit stream using QAM so as to improve the transmission efficiency when the OFDM signal is transmitted in a burst manner.

Allowable Subject Matter

9. Claims 2, 3, 12, and 16-19 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.
10. Claims 6-8 and 13-15 are objected to as being dependent upon an objected claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M. Wang



Ted M Wang
Examiner
Art Unit 2611